LIFE EXPOSURES TO TRAUMATIC EVENTS AND CHRONIC STRAINS AMONG OLDER MEXICAN-ORIGIN INDIVIDUALS

A Thesis

by

MARC ANTHONY GARCIA

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

August 2011

Major Subject: Sociology

Life Exposures to Traumatic Events and Chronic Strains

Among Older Mexican-Origin Individuals

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Approved by:

Chair of Committee,	Rogelio Saenz
Committee Members,	Verna M. Keith
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ABSTRACT

Life Exposures to Traumatic Events and Chronic Strains

Among Older Mexican-Origin Individuals. (August 2011)

Marc Anthony Garcia, B.A., The University of Texas-Pan American

Chair of Advisory Committee: Dr. Rogelio Saenz

The United States Latino population has experienced unprecedented growth in the past several decades. Despite these growing numbers there has been relatively little research that explores how exposure to negative life events and chronic strains affects the physical health outcomes of Latinos. This thesis examines the extent to which traumatic life events and chronic strains affect the physical health outcomes of foreign-born and native-born Mexican-origin individuals (age 45 and older) residing along the U.S./Mexico border. Results from the multivariate analysis show that there is no direct association between traumatic life events and self-reported health. However, chronic strains were found to negatively impact the well-being of both foreign-born and native-born groups. Finally, the hypothesis suggesting that foreign-born respondents would fare better in terms of health (Latino/Hispanic paradox) compared to their native-born counterparts is not supported, with the results shown to be consistently in the opposite direction. Future research is needed on the interplay between different types of stressors and physical health outcomes among Mexican-origin individuals.

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CHAPTER I

INTRODUCTION

The U.S. Latino population has experienced unprecedented growth in the past several decades. In fact, Latinos constitute the largest and fastest growing minority group in the United States. During the 1990s, the Latino population increased by nearly 13 million (or 58 percent), and accounted for 40 percent of the U.S. population growth, expanding from 22.4 million in 1990 to 35.3 million in 2000 (Saenz 2004). Between 2000 and 2010, the Latino population increased an additional 15.2 million (43 percent), four times the nation's 9.7 percent growth rate, to reach 50.5 million Latinos in the United States, accounting for over half of the 27.3 million increase in the total population (U.S. Census Bureau 2011). By 2050, Latinos are projected to comprise approximately 30 percent (132.2 million), of the total U.S. population (U.S. Census Bureau 2011). According to the 2010 U.S. Census, Mexican-origin Latinos, inclusive of Mexican Americans, Mexicans, and Chicana/os comprise the largest ethnic group in the United States, representing 63 percent of the total Latino population.

As these demographic trends indicate, there is an urgent need for research focused on the health of Latinos. While there has been growing interest in their health by both policy makers and researchers, large gaps remain in our understanding of the health status of this group. For instance, despite the growing numbers of Latinos in the United and individuals of Mexican-origin in particular, there is little research that explores how

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This thesis follows the style of the *Journal of Health and Social Behavior*.

exposure to stress and negative life events affects the physical health outcomes of Latinos. This is an important issue because minority ethnic status in general is associated with greater exposure to events that have been shown to adversely affect the health in the general population (Franko, Striegel-Moore, Brown, Barton, McMahon et al. 2004; Golding, Potts, and Aneshensel 1991; Hatch and Dohrenwend 2007; Lu and Chen 2004; Turner and Lloyd 2004; Turner and Avison 2003). Indeed, Mexican-origin ethnicity is a social characteristic thought to be associated with exposure to life events and strains, partly due to the economic conditions of Latinos in the United States (Cervantes and Castro 1985; Cuellar and Roberts 1984; Golding et al. 1991; Vega, Hough, and Miranda 1985). Previous research has demonstrated that individuals with lower socioeconomic status (i.e. poor and low levels of education) are more likely to have the highest rates of morbidity, mortality, and mental disorder compared to individuals with higher socioeconomic status (Adler 1994; Elo and Preston 1996; Hayward, Crimmins, Miles and Yang 2000; House, Lepkowshi, Mckinney, Mero, Kessler et al. 1994; House 2002; Lantz, House, Mero, and Williams 2005; Marmot, Ryff, Bumpass, Shipley, and Marks 1997; Preston and Taubman 1994). In contrast, other researchers have found that Latinos on the average have better health despite their low socioeconomic status (Markides and Coreil 1986; Markides and Eschbach 2005).

It is well documented that Mexican-origin individuals have high poverty rates, the highest uninsured rates, and the lowest educational attainment rates of any other Latino subgroup in the United States (Amey, Seccombe, and Duncan 1995; Angel and Angel 1996; Angel, Angel, and Markides 2002; Saenz and Rubio 2007; Telles and Ortiz

2007). Mexican Americans are also found to have lower socioeconomic status, and employment rates than whites (Cervantes and Castro 1985; Vega et al. 1985; Vega, Kolody, Valle, and Hough 1986; Ramirez and de la Cruz 2003; Duncan, Hotz, and Trejo 2006). This may partly be due to the fact that a significant portion (38 percent) of Mexican-origin individuals are foreign-born, with approximately 11.5 million estimated to have non-U.S. nativity (U.S. Census Bureau 2009).

Latinos residing in the United States may face substantial adversity, given the stresses associated with immigration, low socioeconomic status, low income, poor educational and employment opportunities, and inadequate access to health care (Gallo, Penedo, de los Monteros, and Arguelles 2009). Indeed, Latinos have been found to experience more exposure to stressors than the general U.S. population (Blume, Resor, Villanueva, and Braddy 2009; Perilla, Norris, and Lavizzo 2002; Golding, et al. 1991). Additionally, Golding et al. (1991) found Latinos were significantly more likely to report chronic life stressors, such as economic-strain, and were significantly less likely to report positive life events than their native-born whites. Furthermore, Cuellar, Bastida, and Braccio (2004), found immigration experiences among Latinos to be associated with stressors and challenges that may compound the risk associated with lower socioeconomic status. For instance, undocumented immigrants residing in the United States have been found to face additional adversity, such as severe economic and occupational hardship, fear of deportation, and residential instability (Perez-Smith, Spirito, and Boergers 2002). Finally, in a recent study Sladkova (2007), found the

process of unauthorized immigration to the United States to often be traumatic, frequently leading to injury, extortion, detention, or even death.

Given that the U.S. Latino population experiences adversity and stress across multiple domains, it is reasonable to expect that this group would exhibit poor physical health outcomes compared to more advantaged groups, such as non-Latino whites. Despite these disadvantages, Latinos residing in the United States often show equal or better physical health and mortality outcomes than their white counterparts, a phenomenon commonly referred to as the "Latino/Hispanic paradox" (Markides and Coreil 1986). This is a paradox because most Latinos in the United States are socioeconomically disadvantaged vis-a-vis whites, and previous research from the United States and elsewhere has shown a consistent association between low socioeconomic status and poor health outcomes (Markides and Eschbach 2005). Similarly, foreign-born Latinos also tend to show better physical health and mortality outcomes than their native-born counterparts, although this initial advantage declines with length of residence in the United States. In addition, most Latinos groups with the exception of Puerto Ricans, exhibit levels of adult mortality similar to or better than their white counterparts (Elo, Turra, Kestenbaum, and Ferguson 2004; Hummer, Rogers, Amir, Forbes, and Frisbie 2000; Sorlie, Backlund, Johnson, and Roggot 1993),though large variations in mortality appear within the Latino population, Mexicans, Central Americans, and South Americans are most likely to experience this mortality advantage (Markides and Eschbach 2005; Palloni and Arias 2004; Hummer et al. 2000).

Previous research regarding mortality rates (Markides and Coreil 1986; Palloni and Arias 2004), birth outcomes (Gonzalez-Quintero, Tolaymat, Luke, Gonzalez-Garcia, Duthely et al. 2006; Hummer, Powers, Pullum, Gossman, and Frisbie 2007), and mental disorders (Alegria, Canino, Shrout, Meghan, Naihua et al. 2008; Kessler, Berglund, Delmer, Jin, Merikangas et al. 2005; Brown, Sellers, Brown, and Jackson 1999; Kessler and Zhao 1999; Kessler, McGonagle, Zhao, and Nelson 1994) are more supportive of the Latino health advantage. However, research examining other health outcomes such as cancer and cardiovascular disease are inconsistent. In contrast, Latinos have been found to be disproportionately vulnerable to certain health conditions such as diabetes, obesity, and infectious and parasitic diseases (Bastida and Pagan 2002; Mutchler and Angel 2000; Ostir, Markides, Black, and Goodwin 1998; Hazuda and Espino 1997; Vega and Amaro 1994; Hayes-Bautista 1992), and suffer significantly higher rates of disability compared to whites (Peek, Ottenbacher, Markides, and Ostir 2003; Zsembik, Peek, and Peek 2000; Angel and Angel 1998; Angel and Angel 1997; Hazuda and Espino 1997; Markides, Rudkin, Angel, and Espino 1997).

Markides and Coreil (1986) suggested possible explanations for the Latino/Hispanic paradox, which included certain cultural practices, strong family support, and selective migration. Yet, reaching definitive conclusions regarding the relative health advantages and disadvantages of the U.S. Latinos population is difficult because of several factors (Gallo et al. 2009). Franzini, Ribble, and Keddie (2001) suggested other explanations may contribute to lower rates of mortality for Latinos. For instance, some evidence suggests that misclassification of ethnicity on death certificates

may bias vital statistics data. In addition, selective migration, that is, disproportionate migration by individuals in good health compared with those in poor health into the United States, and selective migration back to the country of origin by Latinos experiencing declining health or a "salmon bias" may also lower the rates of mortality of those who remain. Conversely, in a study that tested the salmon bias theory, Abraido-Lanza, Dohrenwend, Ng-Mak, and Turner (1999), found that neither the salmon bias nor the healthy migrant hypothesis explained the discrepancies in mortality between Latinos and whites. They concluded other factors must be operating to produce the lower mortality rates among Latinos. Stress may be one such factor.

There is a vast array of research that has shown that reports of stressful life events, chronic and other forms of stress are related to a wide variety of mental, biological, and physical health outcomes. Stress has long been a major focus among researchers interested in studying environmental and psychosocial influences on health. Research has largely pursued three major types of stress: life events, chronic strains, and daily hassles (Thoits 1983; Kessler, Price, and Wortman 1985; Aneshensel 1992). Life events are described as discrete generally one-time occurrences (e.g. serious accident, injury or illness, death of a loved one) (Turner, Wheaton, and Lloyd 1995). Dohrenwend (1973) describes two distinct conceptions of the characteristic that makes life events stressful. The first is that the events are negative or undesirable in quality, and the second is that the occurrence of these events usually evokes or is associated with some adaptive or coping behavior. Pearlin (1989) describes the second major type of stressor, chronic strains, also known as chronic stress as involving relatively enduring problems,

conflicts and threats that many individuals face in their daily lives. Chronic strains differ from life events in that these occurrences are persistent and prolonged over time, such as having a serious chronic illness, difficulties in job, marriage, and parenthood, living in poverty or residing in a crime ridden neighborhood (Wheaton 1990; Turner and Avison 2003). The last type of stress, daily hassles are described as relatively minor events arising out of day to day living such as everyday concerns of work, and commuting between work and home (Serido, Almeida, and Wethington 2004). Wheaton (1999) further defines daily hassles as small unexpected events that disrupt daily life, such as arguing with children, unexpected work deadlines, and a malfunctioning appliance.

This research aims to examine the health of individuals over time, simultaneously considering the impact of negative life events and chronic strains. In particular this thesis focuses on the effects of lifetime exposure to major and potentially traumatic events and chronic stress on the physical health of the largest Latino group in the United States, namely, the Mexican-origin population. Specifically, this research is concerned with stressors that negatively influence the morbidity of Mexican-Americans and Mexican immigrants residing in a densely Mexican American populated region, the Rio Grande Valley are of, Texas. Thus, the aim of this research is to provide information on the impact of stress (lifetime traumas/events and chronic strains) on physical health outcomes for a Mexican-origin population that is about equally divided between foreign-born (45%) and native-born (55%) residing along the Texas/Mexico border.

Few studies have investigated the effects of traumatic life events and chronic strain on the physical health outcomes of Mexican-origin individuals residing in the

United States, and those that do utilize national samples of Latinos with comparisons made to whites. At the time of this writing there has been no research that specifically compares native-born to foreign-born populations within a single ethnic group. This research hopes to add to the literature on stress by extending the investigation of the Latino/Hispanic paradox to a local region which includes three counties (Cameron, Hidalgo, and Starr) along the Texas/Mexico border with a Mexican-origin population that exceeds 86 percent of the area's total population (U.S. Census 2008a). It is no coincidence that the poverty levels in these counties are also among the highest in the country (34.0%, 35.2%, and 38.5%, respectively) (U.S. Census 2008b). Regionalizing the study to an ethnic population with high proportions of Mexican-origin individuals living in poverty affords the opportunity to evaluate the relevance of the Latino/Hispanic paradox for native-born and foreign-born individuals and determine whether in fact a paradox exists within a singular ethnic group. Hence, this study seeks to explore whether the paradox is generalizable to local/regional populations. These findings seek to contribute to a better understanding of the Latino/Hispanic paradox between native-born and foreign-born Mexican-origin individuals with regards to the effects of traumatic life events and chronic strains on physical health outcomes.

This thesis consists of five chapters. Chapter I highlights the goals of the research undertaken here. Chapter II presents a literature review on the relationship between stress and health. In this chapter the different types of stressors are outlined and a discussion is presented on how they are related to mental, biological and physical health. Chapter III describes the data and the methods used to carry out the analysis. The data

used to conduct the analysis are from the Border Epidemiologic Study on Aging (BESA). These data allow for the examination of the effect of traumatic life events on the morbidity of Mexican Americans and Mexican immigrants over a 12 year time period. Chapter IV discusses the findings from the logistic regression models. Finally, Chapter V summarizes the findings, describes the limitations of the study and recommendations for future research, and concludes with a discussion of the implications of the results.

CHAPTER II

LITERATURE REVIEW AND THEORETICAL PERSPECTIVE

Background

The concept of stress has long been a major focus among researchers interested in environmental and psychosocial influences on health (Cohen, Kessler and Gordon 1995). Research has shown that reports of stressful life events are related to a wide variety of mental and physical health outcomes. A substantial body of evidence has accumulated over the past several decades supporting the conclusion that the nature of the social environment is consequential for mental and physical health. Previous studies have shown that stressful life events are associated with adverse mental and physical health outcomes (Brown and Harris 1989; Dohrenwend 1998; Turner and Lloyd 1995; Reynolds and Turner 2008; Lantz et al. 2005) and, that people exposed to high levels of stressful live events experience greater degeneration of overall health than do people who have been exposed to lower levels of life stress (Jemmot and Locke 1984).

Review of the literature suggests that research on the significance of social stress for health outcomes can be traced back to the role of Adolf Meyer in the 1930s (Cohen et al. 1995; Turner and Avison 2003). Meyer advocated that physicians fill out a life chart as part of the medical examination of ill patients in the belief that elicited life events could be of etiologic importance for a variety of physical illnesses (Cohen et al. 1995; Lief 1948; Meyer 1951). Additionally, Thoits (2010) credits the endocrinologist

Hans Selye's (1956) book *The Stress of Life* as making a major contribution to the study of stress. In his research on the physiological consequences of stress in laboratory animals, Selye conceptualized stress as exposure to noxious environmental stimuli. Among the stages of physiological reactions to noxious events, he linked the exhaustion stage (depletion of bodily defenses against stress) to subsequent risks of high blood pressure, heart disease, and other diseases of adaptation. These physiological reactions to stressors and their deleterious effects on physical health were later confirmed in human subjects (Thoits 2010). Hawkins, Davies and Holmes (1957) in an effort to systematize Meyer's life chart later developed the Schedule of Recent Experiences (SRE), a 42- item questionnaire that included events such as marital problems, relationship changes, work and residential changes, and family relationships (Cohen et al. 1995; Hawkins et al. 1957; Turner 2001).

However, serious interest by epidemiologists and social scientists did not begin until the publication of Holmes and Rahe's (1967) Social Readjustment Rating Scale (SRRS) (Avison and Turner 1988; Hatch and Dohrenwend 2007; Thoits 2010; Turner and Avison 2003; Turner and Lloyd 1995). The SRRS created an event checklist that provided researchers with an instrument to measure stressful events that were social in nature. This instrument significantly impacted the research on the relationship between life events and illness, largely in part to the documentation of dramatic associations, such as an effect of stressful life events on sudden cardiac death (Cohen et al. 1995; Rahe and Lind 1971). Hundreds of studies soon followed, investigating the relationship between stress exposure and various mental and physical health outcomes (Thoits 2010). In the

majority of recent studies, checklist approaches have been used to inventory life events. This literature has demonstrated a reliable association between life stress and the occurrence of both psychological distress and risk for physical health problems (Jemmot and Locke 1984; Thoits 1983, Turner 2001).

Definition of Stress

The concept of stress has been characterized in a variety of different ways. It has often been used to describe the ways in which the body copes with environmental, psychosocial, and physical challenges. Sometimes it refers to an experience of physical tension or distress stimulated by the environment, and other times to the occurrence of events or experiences that are assumed to involve adaptive demands (Turner 2001). Pearlin (1989) points out that conceptualizations of stress generally emphasize the following elements: a state of arousal resulting either from the presence of socioenvironmental demands that tax the ordinary adaptive capacity of the individual or from the absence of the means to attain sought-after ends. Despite the varying constructs of stress, Cohen et al. (1995:3) argue that all perspectives share an interest with the process in which "environmental demands tax or exceed the adaptive capacity of an organism, resulting in psychological and biological changes that may place persons at risk for disease."

Pearlin (1989) suggests most research into stress begins with an experience, or an exigency that individuals confront, and their perceptions of that experience as either

threatening or burdensome. From a stress process perspective, stress has been characterized as either a stimulus an individual must confront or as the response to the stimulus. Within sociological stress research, stress is viewed as a process with three parts: stressors, mediators, and outcomes. Stressors refer to the experiential circumstances that give rise to stress. Stressors can manifest in the form of a traumatic/negative life event such as the death of a loved one, or a chronic strain, such as living in poverty. In addition, stress can be seen as arising out of two broad perspectives: the occurrence of discrete events and the presence of relatively continuous problems. According to Pearlin, Morton, and Lieberman (1981) the convergence of negative life events and chronic strains may produce stress in two ways: 1) the experience of traumatic/negative life event stress may change the meaning of existing chronic strains, and; 2) traumatic/life events may generate new chronic strains or magnify existing chronic strains. An individual's response to a traumatic/negative life event or chronic strain is largely dependent on the second part of the stress process, mediators. Individuals often differ in their responses to stressors. For instance, not everyone exposed to stress suffers deleterious health consequences. Indeed, similar stressors do not necessarily lead to similar stress outcomes. Mediators have been shown to govern (or mediate) the effects of stressors on stress outcomes. Social support, social integration, various belief systems, coping repertoires, and self-concepts, such as mastery and self-esteem are among the resources that serve as protective barriers to stressors (Pearlin 2010). Finally, stress outcomes are the effect of exposure to stress. Aneshensel, Rutter,

and Lachenbruch (1991) assert that a basic premise of social stress theory is that the effects of stress are non-specific and not limited to any particular disorder.

While there seems little doubt that a significant and etiologically meaningful link exists between stressful life events and manifestations of physical ill health, it remains unclear as to exactly how this process may occur (Turner and Avison 2003).The definition of stress here emphasizes the relationship between the individual and the environment. Thus, for the purpose of this thesis, the term "stress" will be operationalized as the process in which environmental demands strain an individual's adaptive capacity resulting in outcomes deleterious to health (Cohen et al. 1995). In the next section I describe in detail the three types of stressors: life events, chronic strains, and daily hassles.

Life Events and Traumas

The early work of Hans Selye (1956) provided an important theoretical foundation for life events research. Life stress typically refers to negative change, or the undesirable demand characterized by discrete, and observable environmental and social changes that are potentially threatening because they precipitate the need for adjustment and are significantly important in their potential impact that they cannot be treated as relatively routine exigencies of daily life (Cohen et al., 1995). Selye (1956) contended that stress is comprised of nonspecific biological change elicited in response to

environmental events, and even small changes occurring in close succession can influence susceptibility and thus disease.

Turner et al. (1995) describe life events as discrete generally one-time occurrences (e.g. death of a loved one). Indeed, there are three essential components to the above definition: 1) discreteness, 2) observability in principle, and 3) a self-limiting time course for the event (Cohen et al. 1995). In addition, life events have generally been divided into two categories: recent life events that have occurred in the recent past (preceding 12 months), and major traumatic events which are not limited to the past year and include all major life events that have occurred over the life course (Turner et al. 1995). Traumatic events are generally distinguished from other life events by the magnitude of their onerousness (Wheaton 1994) and by their violent character (Norris 1990).When considering life events as stressors, Pearlin (1989) states it is important to establish that events, in fact are events and not simply proxy indicators of chronic strains. Some life events, like the unexpected death of a loved one, are equally distributed over the lifespan, while others, like sexual assaults or abuse by parents, are more likely to occur during childhood or adolescence (Orozco, Borges, Benjet, Medina-Mora, López-Carrillo 2008).

Two methods of life event measurement have dominated the literature: 1) event checklists measures and, 2) intense personal interview measures that utilize qualitative probing questions to specify the characteristics of life events believed to produce stress (Cohen et al. 1995). There are several critical differences between these two types of measures. For instance, checklist methods are based on a theoretical perspective of stress

which asserts that the magnitude of social and environmental change bring about a need for readjustment which is the basis of experienced stress (Cohen et al. 1995). In contrast, personal interview methods are based on a perspective which assumes that social and environmental changes, as well as anticipations of those changes which threaten the most strongly held emotional commitments are the basis for experienced *severe* stress which threatens health (Gorman and Brown 1992).

Life event measures are generally used to assess the cumulative impact of events over a prolonged period of time. A critical difference between checklist measures and interview methods is: checklist measures typically yield a summary score of stressful experiences over a period of time (usually a year), whereas intense interview methods by design are utilized to elicit reports of specific events (not limited to occurrences within the past year) that may have triggered and onset of a severe physical or mental health illness (Cohen et al. 1995). The type of method used to measure life stress depends primarily on the research question one wishes to answer. While checklist questionnaires are easier to administer, they generally cannot equal the precision of an interviewer trained to elicit crucial aspects of specific life events (Cannell, Miller, and Oksenberg 1981).

Chronic Strains

Chronic strains, also known as chronic stress, involve the relatively enduring problems, conflicts and threats that many individuals face in their daily lives (Pearlin

1989). Chronic strains differ from life events in that these occurrences are persistent and prolonged over time, such as enduring economic, occupational, parental, and marital problems (Wheaton 1990; Turner and Avison 2003). According to Pearlin et al. (1981) relatively continuous problems represent an important source of life stress. Conversely discrete events do not necessarily impact people directly; rather they may exert their effect through a wider context of life strains.

Pearlin (1989) argues that social roles provide boundaries to help researchers gain some conceptual control over the extensive array of potential chronic stressors. Problems rooted in institutionalized social roles are often enduring. For instance, when difficulties or threats arise within social roles (e.g. in the work, or marital domain) they are likely to be stressful due the investment and importance we typically attach to our major roles. Indeed, role strain can be divided into several categories. *Role overload* is a condition that exists when demands on energy and stamina exceeds the individual's capacities. Role overload is most common in occupational and homemaker roles. *Interpersonal conflicts within the role sets* are the most commonly reported chronic strain. This role strain assumes many forms, but they all involve problems and difficulties that arise among those who interact with each other in sets of complementary roles such as wife/husband, parent/child, or worker/supervisor. *Inter-role conflict* is found at the juncture of different roles and entails the incompatible demands of occupying multiple roles, particularly demands of work and family. In inter-role conflict, individuals commonly cannot satisfy the demands on one role without neglecting those of the other. *Role captivity* exists when an individual is an unwilling incumbent of a role-

-whether or not the role is onerous or filled with conflict. For example, housewives may be employed workers who would prefer to be at home with their children. *Role restructuring* involves the change or reorganization of roles which force alterations in long-standing patterns of expectations or interactions as the result of the aging process or extraneous exigencies-although the actors and role sets remain the same.

Finally, it is important to keep in mind that not all chronic strains are directly linked to a major role. Pearlin (1989) states that *ambient strains* such as living in poverty, residing in crime ridden neighborhoods, and having serious illness cut across roles and envelop people. These types of strains are ambient in the sense that they cut across the enactment of multiple roles and may be carried into a variety of spheres of social activity (Pearlin, Schieman, Fazio, and Meersman 2005). In addition, other forms of chronic strain can arise from informal and elective roles, such as voluntary activities and associations with friends or acquaintances (Pearlin 1989). Thus, chronic strains that individuals experience through their institutionalized roles do not represent all forms of chronic strains or stressors.

Review of Traumatic Life Events

The literature on exposure to traumatic life events has primarily focused on mental health outcomes (Turner and Lloyd 1995; Turner and Avison 2003; Reynolds and Turner 2008; Wheaton 1990). These studies have linked risk for mental health problems with various social statuses that are believed to represent different social

experiences. (Aneshensel 1992). For example, Turner and Avison (2003) reported that women experience significantly higher levels of recent life events, such as events occurring to others, and death events, while men experience more traumatic events, such as witnessed violence, and more perceived discrimination. In addition, respondents in the lowest socioeconomic category tend to have a higher mean score of lifetime traumatic events than respondents in either the middle or upper socioeconomic categories.

Likewise, Breslau, Davis, Adreski, and Peterson (1991) found respondents with low levels of education and low levels of income experienced a higher prevalence of traumatic events when compared to respondents with higher education and higher income. Additionally, men were found to have more cumulative exposure to particular types of events such as injury/accident traumas, physical assault and witnessing someone injured or killed. In another study, Breslau, Kesslar, Chilcoat, Schultz, Davis et al.(1998) found that reports of all types of traumatic experiences peak during the 16-20 years old age period, such as the rates of a sudden death of a loved, though the probability of experiencing violence related to assault begins after age 20 and remains low through age 45. Furthermore, Norris (1992) found that lifetime exposure to traumatic events significantly decreases with increasing age. For instance, younger respondents had reported significantly higher rates of physical assaults and tragic deaths than middle aged and older aged respondents. Additionally, middle ages respondents were most likely to report property damage due to weather or disaster in the past year in comparison to the other two age groups.

Within the area of mental health numerous studies have focused on specific traumatic events such as: physical or sexual abuse (Brown and Anderson 1991; Bryer, Miller, and Krol 1987; Green 1993; Holmes and Robins 1988; Yama, Tovey, and Fogas 1993), parental deaths and divorces (Brown, Harris, and Bifulco 1986; Faravelli, Ambonetti, Pallanti, and Pazzagli 1986; McLeod 1991; Tennant 1988), and parental psychopathology and substance abuse (West and Prinz 1987), while others (Turner and Lloyd 1995; Turner and Avison 2003) have incorporated some or all of the above.

While the literature on physical health outcomes and mortality is not as vast as that of mental health, epidemiological studies also have linked traumatic life events with a number of physical health outcomes, including mortality (Matthews and Gump 2002; Thoits 1995; Lantz et al.2005). For instance, Sable and Wilkinson (2000) found stress to increase the risk for low birth rates among women who experienced traumatic events. Likewise, Greenwood, Muir, Packham and Madeley (1996) showed that both life stress and a lack of social support significantly affect coronary heart disease incidence and mortality. Additionally, Cohen and Williamson (1991) reported stress induced by traumatic events increased the incidence of other infectious diseases**.** Finally, in a recent study Lantz et al. (2005) found that a count of negative lifetime events was positively associated with the risk of mortality, and that a higher score on a financial stress scale was predictive of having moderate or severe functional impairment.

The epidemiology of traumatic events indicates that the numbers of such events to which individuals have been exposed over their lifetimes are greater in some strata than others (Chen 2007; Hatch and Dohrenwend 2007; Kahn and Pearlin 2006; Lantz et

al. 2005; Pearlin et al. 2005; Thoits 2010). Though these associations may vary with the particular trauma at issue (Hatch and Dohrenwend 2007; Norris 1992; Thoits 2010), in general the numbers tend to be higher among those in lower socioeconomic class positions (Hatch and Dohrenwend 2007; Pearlin et al. 2005; Turner and Avison 2003). Given the evidence that early traumas tend to manifest many years after the trauma was experienced (Turner et sl. 1995; Rutter 1989; Wheaton, Roszell, and Hall 1997), traumatic events need to be considered as being among the stressors that contribute to health disparities among status groups (Pearlin et al. 2005).

For example, exposure to trauma may place individuals at risk for exposure to additional stressors. Research has shown that traumatic events and chronic strains often flow together in people's lives (Pearlin 1989). Pearlin et al. (2005) suggest that exposure to traumatic events may lead to secondary stressors such as chronic strain that exert their own harmful health consequences, either along with or in place of the initial event. For instance, traumatic events can create chronic strains. Likewise, chronic strains can precipitate traumatic events. This process is referred to as "stress proliferation," in which an initial stressor gives rise to additional stressors (Pearlin 1999; Pearlin et al 2005; Thoits 2010). Pearlin et al. (1981) suggest that the convergence of traumatic events and chronic strains can produce stress in two ways: 1) exposure to traumatic events may change the meaning of existing chronic strains and, 2) traumatic events may generate new or magnify existing chronic strains.

Social Support

A significant body of research exists on the relationship between social support and both physical and mental health (Turner and Noh 1988). Social support refers to emotional, informational, or practical assistance from significant others, such as family members or friends that may be real or simply perceived to be available when needed (Thoits 2010). Perceived social support and especially perceived emotional support have been shown to be inversely related to diverse forms of psychological disorder, physical morbidity, and mortality (Aneshensel 1992; House, Landis, and Umberson 1988; Kessler and McLeod 1985; Pearlin et al. 1981; Taylor and Stanton 2007; Thoits 1995; 2010; Turner 1981, Turner and Noh 1983).

Indeed, research on the elderly has demonstrated that social support has important consequences both for physical and for psychological health status (Blazer 1982). Stress researchers have devoted considerable attention to factors that can buffer or weaken the impact of stressors. Thoits (2010) notes that social support has emerged in sociological research as a stress-buffer to handling major events and chronic strains. In addition, Wheaton (1985) suggests that stress-buffering occurs when a resource reduces the harmful effects of stress exposure. This occurs when an individual exposed to stress mobilizes a resource which then alleviates distress. Stress is then "buffered" due in part to the indirect effects via the resource that are oppositional to the direct effects of the stress. The result is that the total causal effect of stress is reduced.

Stress and Health

Previous research has consistently shown a relationship between exposure to stressful life events, chronic strains and a wide variety of mental, biological, and physical health outcomes. Within the area of stress research there are three broad perspectives for assessing the role of stress in disease risk: 1) the environmental perspective, 2) the psychological perspective, and 3) the biological perspective (Cohen et al. 1995). Each perspective focuses on a different stage of the stress process through which environmental demands are manifested into biological and psychological changes that may result in outcomes deleterious to health. The following sections provide a brief overview of each perspective.

The Environmental Stress Perspective

The environmental perspective focuses on the assessment of environmental events or experiences that are objectively associated with significant adaptive demands (Cohen et al. 1995). This perspective is based on a stimulus based definition of stress which emphasizes the discovery of objective environmental conditions that may manifest into stress and lead to deleterious health outcomes (Cohen et al. 1995). Demographic characteristics such as race/ethnicity, occupation, education and income are viewed as fundamental causes that may increase the exposure and vulnerability to stress (Rieker and Bird 2000). In this perspective the majority of evidence on the role of

stressors in a variety of physical and mental outcomes has derived from interest in stressful life events. Event characteristics can include the type of domain of events, the magnitude of events, the temporal characteristics of events, or any combination between events (Cohen et al.1995).

The Psychological Stress Perspective

The psychological perspective of stress emphasizes the individual's perception and evaluation of potential harm posed by events or stressors. Cohen et al. (1995) state that the perception of a threat arises when the demands imposed upon an individual are perceived to exceed the individual's ability to cope with such demands. In assessing psychological stress, it is important to emphasize that stress is not characterized solely in terms of a stimulus condition or the response outcomes, but in terms of the process between the individual and the environment. Hence, psychological stress involves the individual's evaluations of events, as well as his/her own coping resources, and his/her perceptions regarding whether or not he/she is experiencing stress. In sum, the psychological stress perspective asserts that stress arises out of an individual's perceptions, accurate or not, of their relationship to their environment.

The Biological Stress Perspective

Research has repeatedly implicated stress in altering the biological functioning of humans. The biological stress perspective focuses on the activation of physiological systems that are responsive to physical and psychological demands (Cohen et al. 1995). It is generally accepted that prolonged or repeated activation of these systems place individuals at risk for a variety of physical and mental health disorders. There are two interrelated systems that are viewed as primary indicators of stress response: the autonomic nervous system, especially the sympatheticadrenal- medullary system (SAM), and the hypothalamic-pituitary-adrenal axis (HPA) (Cohen et al. 1995; Cohen, Janicki-Deverts, and Miller 2007). Although SAM and HPA hormones are the most often cited as biochemical substances involved in stress responses, alterations in other hormones such as neurotransmitters, elevations in growth hormone, and prolactin secreted by the pituitary gland among others have been found to play a role in stress influences on health (Cohen et al. 1995).

SES, Race and Ethnicity, Stress Exposure and Health

Over the past several decades sociological studies have consistently shown marked inequalities in physical and mental health (Thoits 2010). A substantial body of research has demonstrated that individuals with low levels of education, income, and occupational prestige have among the highest rates of morbidity, disability, mortality,

psychological distress, and mental disorder compared to individuals in more advantaged socioeconomic positions ((Elo and Preston 1996; Hayward et al. 2000; House 2002; House et al. 1994, 2005; Kahn and Pearlin 2006; Kessler et al. 2005; Kessler and Zhao 1999; Lantz et al. 2005; Pearlin et al. 2005; Ross and Wu 1995; Thoits 2010). Furthermore, a large number of studies employing a variety of methods leave no doubt that variations in the health and well-being of individuals correspond to the differences in their status location within systems of inequality (Pearlin 1989; Williams and Collins 2001). Socioeconomic status, race and ethnicity are prominent statuses within these systems. Their associations with rates of morbidity and mortality have been shown to be sufficiently stable over time and across studies that it is reasonable to regard health itself as being stratified, just as statuses within the system are stratified (House et al. 1994; Hummer 1996; Lynch, Smith, Kaplan, and House 2000; McDonough, Duncan, Williams, and House 1997; Pearlin et al. 2005; Williams 1990; Williams and Collins 1995).

In regards to socioeconomic status, Mexican Americans have been found to have lower incomes, and higher unemployment rates when compared to whites and other racial and ethnic groups (Cervantes and Castro 1985; Vega et al. 1985; Vega, Kolody Valle, and Hough 1986; Ramirez and de la Cruz 2003; Reimers 2006; Duncan, Hotz, and Trejo 2006). Additionally, Mexican-origin individuals have also been found to have the highest poverty rates and lowest educational attainment rates among other Latino groups residing in the United States (Saenz and Rubio 2007; Telles and Ortiz 2007; Angel, Angel, and Markides 2002; Angel and Angel 1996; Amey, Seccombe, and Duncan

1995). Furthermore, Mexican immigrants residing in the United States are more likely to work in physically demanding, stressful low paying jobs (Reimers 2006). Thus, socioeconomic factors may significantly affect the health of Mexican-origin individuals. In addition, socioeconomic factors may also manifest in the form of life events or chronic strains.

For instance, socioeconomic status has been shown to be inversely correlated with stress exposure (Lantz et al. 2005; Chen 2007; Hatch and Dohrenwend 2007; Kahn and Pearlin 2006; Thoits 2010). Pearlin et al. (2005) argue that many stressful experiences can be traced back to social structures and people's locations within them. The most encompassing are the various systems of stratification that cut across societies, such as those based on social and economic class, race and ethnicity, gender and age. To the extent that these systems embody the unequal distribution of resources and opportunities, a low status within them may itself be a source of stressful life conditions.

For example, minority racial or ethnic status in general is associated with greater exposure to stressful events (Hatch and Dohrenwend 2007; Turner and Lloyd 2004; Lu and Chen 2004; Turner and Avison 2003; Franko et al. 2004; Golding et al. 1991). Indeed, Mexican-origin ethnicity is a social characteristic thought to be associated with exposure to stressful life events and strains, partly due to the socioeconomic status of Latinos in the United States (Golding et al. 1991; Cervantes and Castro 1985; Cuellar and Roberts 1984; Vega et al. 1985). Numerous studies have shown that Latinos in the Unites States experience more exposure to stress than the general population (Blume et al. 2009; Perilla et al. 2002; Golding, et al. 1991), and are significantly more likely to

report chronic life stressors, such as economic strain than their white counterparts (Golding et al. 1991). In addition, immigrant status has also been found to be associated with stressors and challenges that may compound the risk associated with lower socioeconomic status (Cuellar et al. 2004). For instance, undocumented immigrants residing in the United States have been found to face additional stressors, such as severe economic and occupational hardship, job related exploitation, English-language deficits, cultural differences, fear of deportation, residential instability, discrimination and prejudice, and separation from family (Arbona, Olvera, Rodriguez, Hagan, Linares et al. 2010; Pérez and Fortuna 2005; Rodriguez and Dewolfe 1990; Sullivan and Rehm, 2005; Turra and Goldman 2007). Furthermore, Mexican-origin individuals, both native-born and foreign-born alike have been shown to suffer additional adversities such as social marginalization, poor living conditions, language barriers, and dangerous and/or low paying jobs (Finch and Vega 2003; Hovey and Magana 2000; Magana and Hovey 2003; Perez and Fortuna 2005).

Given that the Mexican-origin population experiences adversity and stress across multiple domains, it is reasonable to expect that this group would exhibit poor physical health outcomes compared to more advantaged groups. Despite these disadvantages, Mexican-origin individuals residing in the United States often show equal or better physical health and mortality outcomes than their white counterparts, a phenomenon commonly referred to as the Latino/Hispanic paradox. The following section provides a brief overview of the paradox.

Latino/Hispanic Paradox

Markides and Coreli (1986) were the first to suggest the existence of a paradox in the health of Latinos. In a comprehensive review of Latinos (mostly Mexican Americans) residing in the southwestern United States, the authors found the health of Latinos to be more comparable with non-Latino whites than with that of African Americans with whom Latinos share similar socioeconomic conditions. These findings were based on evidence from infant mortality, life expectancy, cardiovascular diseases, cancer, and measures of functional health that suggested Latinos had similar health profiles to non-Latino whites. Thus, the suggestion of a "Latino/Hispanic paradox" is based on evidence that Latinos have favorable health and mortality profiles relative to the non-Latino white population. This is a paradox because most Latinos in the United States are socioeconomically disadvantaged in relation to non-Latino whites. Previous research from the United States and elsewhere has consistently demonstrated an association between low socioeconomic status and poor health outcomes (Markides and Eschbach, 2005).

A substantial body of research regarding the mortality rates (Markides and Coreil 1986; Palloni and Arias 2004; Rogers, Hummer, Nam, and Peters 1996; Sorlie et al. 1993), birth outcomes (Brown, Chireau, Jallah, and Howard 2007; Gonzalez-Quintero et al. 2006; Hummer et al. 2007), and mental disorders (Alegria et al. 2008; Kessler et al. 2005; Brown et al. 1999; Kessler and Zhao 1999; Kessler et al. 1994) have been supportive of a Latino health advantage. Conversely, Latinos have been found to be

disproportionately vulnerable to certain health conditions such as diabetes, obesity, and infectious and parasitic diseases (Bastida and Pagan 2002; Mutchler and Angel 2000; Ostir et al. 1998; Hazuda and Espino 1997; Vega and Amaro 1994; Hayes-Bautista 1992; Markides and Coreil 1986), and suffer significantly higher rates of disability compared to whites (Peek et al. 2003; Zsembik, Peek, and Peek 2000; Angel and Angel 1998; Angel and Angel 1997; Hazuda and Espino 1997; Markides, Rudkin, Angel, and Espino 1997).

With regard to nativity, foreign-born individuals residing in the United States tend to show better physical health and mortality outcomes than their native-born counterparts (Hummer, Rogers, Nam, and LeClere 1999; Marmot, Adelstein, and Bulusu 1984; Frisbie, Cho and Hummer 2001). Among studies of Mexican immigrants, the concept of a Latino/Hispanic paradox arises because of their favorable health relative to their poor economic profile. This advantage in health among immigrants has led to the speculation on the roles of culture and migration in producing favorable health.

Markides and Coreil (1986) suggested possible explanations for the Latino/Hispanic paradox, which included certain cultural practices, strong family support, and selective migration. For instance, cultural practices that favor reproductive success may contribute to favorable birth weights and low neonatal mortality. In addition, early and high fertility among Latina females may contribute to lower breast and higher cervical cancer rates. Furthermore, extended family support may reduce the need for psychiatric treatment and protect from stress-related morbidity.

Franzini et al. (2001) suggest other explanations may contribute to the appearance of a health advantage for Latinos. For instance, some evidence suggests that misclassification of ethnicity on death certificates may bias vital statistics data. Latino identification on death certificates is often inconsistent because identification is frequently made by a funeral director or other individual who may not know the decedent well. Similarly, Smith and Bradshaw (2006) found that the Latino mortality advantage in vital registration data linked to census denominators is an artifact of inconsistent identification. In contrast, Palloni and Arias (2004) found little support for data quality explanations given that ethnic classification in vital statistic data sources do not explain age patterns of mortality.

Migration selectivity has been the most common explanation for the observed Mexican paradox. Selective migration, that is, disproportionate migration by individuals in good health compared with those in poor health into the United States and selective migration back to the country of origin by Latinos experiencing declining health or a "salmon bias" may contribute to lower rates of mortality for those who remain (Abraido-Lanza et al. 1999; Franzini, et al.2001; Markides and Eschbach 2005; Palloni and Arias 2004; Vega and Amaro 1994; Weeks, Rumbaut, and Ojeda 1999). For instance, migrants who develop morbid conditions may return to their homelands to take advantage of cheaper medical care and the support of extended family. Conversely, Abraido-Lanza et al. (1999) found that neither the salmon bias nor the healthy migrant hypothesis explained the discrepancies in mortality between Latinos and non-Latino whites. They

concluded other factors must be operating to produce the lower mortality rates among Latinos.

While foreign-born Latinos tend to show better physical health and mortality outcomes than their native-born counterparts, this initial advantage tends to dissipate over time or successive generations (Rumbaut 1997). Indeed, evidence suggests that foreign-born Latinos are more likely to engage in negative health behaviors with length of residence in the United States (Turra and Goldman 2007). Reaching definitive conclusions regarding relative health advantages and disadvantages of the U.S. Latino population has proven difficult. Markides and Eschbach (2005) state the Latino/Hispanic paradox is typically framed by drawing comparisons between Latinos and non-Latino whites. Markides and Coreil (1986) suggested the more appropriate comparisons should be made with African Americans for whom the differences in health are stark while socioeconomic differences are narrow.

In the context of the present study, it is important to assess whether chronic strains, in addition to traumatic life events affect both the health of native-born and foreign-born Mexican-origin individuals. This study aims to add to the discourse concerning the stress process by utilizing social stress theory to analyze an understudied minority population and investigate whether the Latino/Hispanic paradox is generalizable to local/regional populations. The following section gives an overview of the theoretical framework used to guide this research.

Theoretical Perspective

The theoretical framework for examining exposure to traumatic life events and chronic strains utilized in this study is what some sociologists refer to as "social stress theory" (Aneshensel et al. 1991). Social stress theory allows researchers to assess not only the social distribution of stress, but also social variations in response to stress (Aneshensel 1992). Sociologists have made numerous contributions to the study of stress based on the environmental, psychological, and biological perspectives. The theoretical framework that will guide this study is based on the environmental perspective of stress theory. The environmental perspective in stress theory emphasizes assessment of environmental situations or experiences that are objectively related to substantial adaptive demands (Cohen et al.1995).

From an environmental-structural perspective, stress exposure is affected by an individual's social location and place within existing social structures. From this thesis approach, variations in responses could also be influenced by structural and, by extension of Pearlin et al. (2005) assertions, geographical (i.e., regional) considerations as these may also constrain access to stress mediating mechanisms (e.g. social and mental health treatment institutions) that could reduce negative health outcomes. Taking into consideration and incorporating Markides and Coreli (1986) Latino/Hispanic paradox description, this research theory extends both descriptive frames to describe how social stress potentially affects an ethnic sub-group sample living in a still-developing regional enclave along the south Texas border. Descriptively, due to high

levels of poverty, rural populations access to mental/health services in the region are constrained by a lack of institutional (e.g. mental/health clinics) and geographical access (lack of mass transportation infrastructure) to service delivery or any other type of stress mediating. As such local populations must also contend with structural limitations of mental and physical health service access.

Unlike other fields that study stress, sociology investigates how the distribution and experiences related to stress outcomes (e.g. mental health and physical well-being) can vary between ethnic populations and regional populations. Sociological descriptions such as those developed by Pearlin (2005) take note that individuals, by virtue of their distinct social location, are affected and respond differently to stresses that can affect health related outcomes. As such this research theory describes how stress outcomes can vary among an ethnic sub-group within a specific regional context. Through the study of specific external micro-stressors such as traumatic life events, chronic strains, and the availability of stress mediators such as social support, and stress outcomes, scientists are able to estimate the impact that social stresses can produce at the individual level. At the macro-level, social environmental approaches can include in their analysis structural aspects affecting socially and geographically marginal populations that can also produce and compound negative stress outcomes (Pearlin et al. 2005). Research and analysis of stress outcomes among a regional population allows research to investigate and help understand if the Latino/Hispanic paradox exists beyond a general description and applies at localized sub-group contexts.

In terms of the present study, the environmental perspective will be applied to analyze how respondents characterize environmental change (traumatic events/chronic strains) that may influence the onset or progression of disease. For instance, a traumatic life event, such as a death of a loved one or an accident may trigger behavioral or biological processes that contribute to the onset of a disease process. Once this process is set in motion, the disease/illness could then develop over many years (Cohen et al.1995).

Hypotheses

Differential vulnerability and exposure to stress has been a common explanation for socioeconomic disparities in health. This research investigates the extent to which exposure to traumatic life events and other stress is related to poor health outcomes in a regionally representative sample of native-born and foreign-born individuals of Mexican-origin. Specifically we investigate: Do traumatic events negatively influence the morbidity outcomes of and older Mexican population? Three hypotheses will be investigated.

H_1= exposure to traumatic events leads to poor health outcomes

H_2= exposure to chronic strains leads to poor health outcomes

H_3= foreign-born respondents fare better in health than their native-born counterparts

CHAPTER III

METHODOLOGY

Data

The hypotheses introduced above will be examined using the data from the Border Epidemiologic Study on Aging (BESA). This is a longitudinal four wave population-based study on the health and functional status of community-dwelling Mexican Americans aged 45 and older residing in the United States/Mexico border area of South Texas. This region is known as the Lower Rio Grande Valley (LRGV), and consists of Cameron, Hidalgo, and Starr counties. BESA is designed to study patterns of disablement in middle aged and older Mexican-origin individuals, and includes extensive socioeconomic, demographic and health information.

The 1996-1997 baseline wave of this panel study used area probability sampling that resulted in a final sample of 1089 households with at least one member aged 45 and over who agreed to complete an in-home, face-to-face interview in either Spanish or English, with a response rate of 92 percent. The sampling frame was based on maps drawn from the 1990 U.S. Census. The total sample pool of participants was age adjusted by census tract to reflect the 1994 age structure and proportionally selected according to their overall representation within each tract. The weighted BESA sample represented more than 300,000 residents Cameron, Hidalgo, and Starr counties. Survey participants were administered a two-hour face-to-face health survey instrument every

two years. Follow-up interviews for wave 2 were conducted in 1999, with wave 3 conducted in (2001-2002) and wave 4 in (2005-2006). Loss to attrition was minimized by using a detailed follow-up plan that included establishing periodic contact with all participants through biannual telephone calls as well as with mailings of birthday and holiday cards.

Independent Variables

The measure of stress exposure included in this study involves consideration of two dimensions: traumatic events and chronic stress. Accordingly, there are two primary independent variables included in this thesis: life traumas, and general problems.

The first independent variable, *life traumas* is classified as potentially serious events that could have happened at *any* time in a person's life. Life traumas were assessed in the baseline survey instrument by a single open-ended question asked of respondents: "What do you consider the first major tragedy in your life?" Following the lead of Turner and Avison (2003), the open-ended responses were recoded and five categories were created for the regression analysis. The categories are: 1) major events which include several social adversities that are not typically violent in nature such as parental/spousal divorce, and involuntary loss of a job; 2) traumatic events, which imply force or coercion and includes event such as rape, physical and emotional abuse, and having a serious accident, injury, or illness that was life threatening or caused long-term disability; 3) witnessed violence refers to seeing someone killed and witnessing serious

physical or emotional abuse; 4) experiences of bad news includes hearing of someone you know having committed suicide, being rape, or being serious injured, and; 5) death events include the death of relatives and close friends.

The second independent variable general problems, is used to measure exposure to chronic stress. A continuous count variable was created to assess the number of chronic strains experienced by the respondents. At wave 4, respondents were administered a 16 questions item checklist regarding ongoing problems in their lives. Items on the checklist included not having enough money, difficulty paying for or getting medical care, poor housing, fear of crime, injuries and disabilities, lack of transportation, and not enough job opportunities. At wave 4, general problems were summed up to create a cumulative continuous score to assess the amount of exposure to chronic strains across multiple domains. This index was not standardized.

Dependent Variable

Fayers and Sprangers (2002) state that one of the most frequently used measures of self-reported health status is a single question asking respondents to rate their overall health on a scale from "excellent" to "poor." There is widespread agreement that this simple question provides a useful summary of how respondents perceive their overall health status. Previous research has shown that self-reported health measures predict mortality and morbidity, and can be used to screen high-risk groups. In addition, self-rated health questions have been shown to be related to functional ability, medical

diagnosis, and physical and mental symptoms. For this reason subjective measures of health can be used as another pathway to study the relationship between stress and health.

The dependent variable for the analysis is self-rated health at wave 4. Self-rated health was assessed by a single question asked of respondents: "In general, would you say your health is…" 1) excellent; 2) good; 3) fair; or 4) poor. For the purpose of these analyses the four responses were collapsed into two categories: excellent/good health, and fair/poor health. These two categories were coded 0= excellent/good health; 1=fair/poor health. Each category contained approximately half of the respondents.

Control Variables

The analysis includes several control variables. Demographic control variables are taken from the Wave 1 baseline survey and include gender (0=male, 1-female), nativity (0=foreign-born, 1= native-born), and age (based on self-reports and categorized as 45-54, 55-64, 65-74, and 75 or older). In addition socioeconomic status (SES) is measured using two variables: 1) education, measured as total years of school completed, will be grouped in three categories: 1-8, 9-12, 12+, and 2) income, measured as the total household income from all sources for respondent, including partner's income, which will be grouped into three categories: $0-$9,999, $10,000-$29,999 and $30,000 or more. Finally, baseline health status is included as a control variable. Base

line health status is assessed by a single question asked of respondents: "In general, would you say your health is…" 1) excellent; 2) good; 3) fair; or 4) poor.

Mediator/Moderator Variables

Social support is included in the analysis as a mediator/moderator variable. A substantial body of research exists on the relationship between social support and both physical and mental health (Turner and Noh 1988). Social support is thought to weaken or buffer the impact of stressors. Indeed, research on the elderly has demonstrated that social support has significant consequences for physical and mental health outcomes (Blazer 1982). Thus, social stress theory argues that social support may mediate the effects of stress or moderate the effects of stress on health. Social support was assessed in the survey instrument at wave 4 by a question asking the respondent "who is the person who would provide the most care for you?" A dummy variable social support was then created (0=no support, 1=support).

In addition, two moderator variables were created to test the interaction effects of life traumas and general problems on self-reported health in wave 4. The first variable TraumaSupport was calculated by multiplying life traumas with social support and used to assess the interaction of life traumas and social support on self-reported health in wave 4. The second moderator variable GenProbSupport was calculated by multiplying general problems with social support and used to assess the interaction of general

problems and social support on the effects of self-reported health in wave 4. Table 1 contains a list of the variables used in the analysis and describes the coding for each one.

Logistic Regression

Utilizing the social stress model, this thesis asserts that an individual's exposure to lifetime traumas and general problems is associated with his or her self-reported health. Furthermore, this thesis argues that an individual's personal resources in the form of social support both mediate and moderate their effects of stress exposure. The empirical analysis entails estimating the influence traumatic life events and chronic strains on the health of Mexican-origin individuals residing in the Rio Grande Valley. Logistic regression will be employed in STATA to estimate the relative risk of specific health status outcomes. The outcome variable self-rated health in wave 4 has two possible values: 1) excellent/good (the reference category), and 2) fair/poor. This model will be employed to predict the relative risk of being in fair/poor health compared with being in the excellent/good health category. In order to not to bias our estimates of the independent variables, we introduce a set of controls for socioeconomic and demographic characteristics known to influence health.

Table 1: Description of Variables Included in the Analysis

Variable	Description
Stressors	Life Traumas (Wave 1)
	Major Events
	Traumatic Events
	Witnessed Violence
	Experiences of Bad News
	Death Events
	General Problems (wave 4)
	Count of Chronic Strains
Mediator and Moderators	Social Support (wave 4)
	TraumaSupport (wave 4)
	Life Traumas*Social Support
	GenProbSupport (wave 4)
	General Problems*Social Support
Control Variables	Gender (wave 4)
	Male
	Female
	Nativity (wave 4)
	Native-born
	Foreign-born
	Age (wave 4)
	45-54
	55-64
	65-74
	75+
	Total Household Income (wave 4)
	$0-$9,999
	$10,000-$29,999
	$30,000 +
	Baseline Health (wave 1)
	Excellent
	Good
	Fair
	Poor
Outcome Variable	Self-Rated Health(wave 4)
	Excellent/Good
	Fair/Poor

Summary

This chapter describes the data and sample used in the present study. In addition, the survey instrument and operationalization of the variables that are employed in the plan of analysis were discussed. The next chapter presents the results of the regression equations and discusses the major findings concerning the effects of the independent, mediating, and moderating variables on the self-reported health of Mexican-origin individuals.

CHAPTER IV

ANALYSIS

This chapter presents the results of the analysis that focuses on the various effects of stress exposure on subjective health status among elderly Mexican-origin individuals. The analysis was designed to answer the central questions of this thesis: 1) what relationship exists between lifetime traumas, chronic strains, and the physical health status of elderly Mexican-origin individuals, and 2) does the Latino/Hispanic paradox extend to a local/regional population with regards to the effects of traumatic life events and chronic strains on physical health outcomes of elderly Mexican-origin individuals. The chapter begins with the discussion of descriptive characteristics of respondents in the sample, and variations in stress exposure between foreign-born and native-born respondents followed by the presentation of the findings concerning the effects of life traumas and chronic strains on self-rated health in wave 4. The chapter concludes with a discussion of the findings.

Descriptive Statistics

Before presenting the results of the regressions models it is important to understand the characteristics of Mexican-origin individuals included in the analysis. Descriptive statistics were calculated to assess sample characteristics of respondents in wave 4. General descriptive statistics on the control variables can be found in Table 2.

The Mexican-origin population in wave 4 is about equally divided between foreign-born (48%) and native-born (52%). Around 72 percent of respondents are female compared to 28 percent males. A significant portion of the sample was classified as socioeconomically disadvantaged with approximately 42 percent reporting annual household incomes of $0-$9,999. In addition, 74 percent of respondents reported having 0-8 years of education. Furthermore, about 54 percent of respondent reported being over the age of 65.

Table 2: Descriptive Statistics of Control Variables

Control Variables	Country of Birth		
Gender	**Mexico (%)**	**US (%)**	**Total (%)**
Males	12.3	15.6	27.9
Females	35.9	36.3	72.1
Education			
0-8	41.4	32.6	74.0
9-12	5.2	10.0	15.1
12+	1.6	9.3	10.9
Household Income			
$0-$9,999	24.5	17.8	42.3
$10,000-$29,999	20.9	21.5	42.4
$30,000+	2.6	12.7	15.3
Age			
45-54	10.7	10.2	20.9
55-64	11.3	14.2	25.5
65-74	14.8	12.5	27.4
75+	11.3	14.8	26.2
General Health (wave 1)			
Excellent	7.4	10.6	18.0
Good	13.9	16.1	30.0
Fair	19.1	20.2	39.3
Poor	5.5	7.2	12.7

At baseline, 48 percent of the full sample reported having excellent or good health compared to 52 percent reporting fair or poor health. No large differences between foreign-born and native-born respondents were reported for baseline health.

The distribution of predictor and mediating/moderating variables can be found in Table 3. The first of two independent variables of main interest is life traumas measured at wave 1. In the baseline sample, 3.9% of foreign-born respondents reported a major event as their first life tragedy compared to 4.3% of native-born respondents. About 4.8% of the foreign-born reported experiencing a traumatic event compared with 5.7% of the native-born. The category of "witnessed violence was equally distributed between foreign-born and native-born with .2% of both groups reporting similar rates of exposure. Foreign-born respondents (4.3%) reported experiences of receiving news (i.e. hearing of someone you know having being serious injured) compared to native-born (6.2%). By far, death events, such as the loss of parent, spouse, or child was the most reported life trauma for both foreign-born (32.7%) and native-born (37.8%) groups.

The second main independent variable of interest is general problems at wave 4.General problems was measured by a count of chronic strains. An independent t-test was conducted to determine if any significant differences exist between foreign-born and native-born respondents exposure to chronic stress. As indicated in Table 4, there were statistically significant differences between foreign-born and native-born respondents when comparing general problem scores. That is, on average, foreign-born respondents scored higher on the general problem scale than native-born respondents. This finding is

not surprising given that foreign-born immigrants are more likely to experience additional adversities compared to their native-born counter parts.

Table 3: Distribution of Predictor, Mediating, and Moderating Variables

Stressors	Country of Birth		
Life Traumas	Mexico (%)	USA (%)	Total (%)
Major Event	3.9	4.3	8.2
Traumatic Event	4.8	5.7	10.5
Witnessed Event	0.2	0.2	0.3
Experiences of Bad News	4.3	6.2	10.5
Death Events	32.7	37.8	70.4
Social Support			
Yes	38.2	38.8	77.0
No	10.0	13.0	23.0
General Health (wave 4)			
Excellent/Good	20.7	25.4	46.1
Fair/Poor	25.1	28.8	53.9

For the mediating variable social support, about 38.2% of foreign-born respondents reported having some form of social support compared with 38.8% of native-born respondents. Additionally, 10% percent of foreign-born respondents reported not having any form of social support compared with 13% of native-born respondents. A Chi-square test was conducted on the mediating variable to determine if any significant differences existed between foreign-born and native-born respondents. Table 4 shows the similar numbers for social support reported by foreign-born and native-born respondents. There were no significant differences reported in social support by either group. For the most part, foreign-born and native-born respondents had similar reports of social support.

Table 4: T-test and Chi-square Results

	Country of Birth				
Stressor and Mediator	Mexico		US		
	Mean (SD)	(%)	Mean (SD)	(%)	P-value
General Problems	2.7 (3.8)		1.9(3.5)		0.005
Social Support (wave 4)		48.2		51.8	0.133

Results from Logistic Regression

The multivariate analysis is designed to examine the relationship between traumatic life events, and chronic strains on self-reported health for foreign-born and native-born Mexican-origin individuals living in the Rio Grande Valley. Table 5 shows the results of for the effects of the control variables on self-rated health as fair or poor. The results show that the control variables education, age, and self-reported health at wave 1 are related to perceived health in the expected directions. That is, education, age, and general health status at wave 1 are positively related to perceived health status at wave 4. Conversely, gender, country of birth, and household income are not associated with perceived health.

Table 5: Regression Results for Control Variables

General Health (wave 4)	odds ration	P-value
Gender		
Female	1.200152	0.418
Male	ref	ref
Nativity		
US-born	1.239615	0.300
Foreign-born	ref	ref
Education		
0-8 years	2.900454	0.005
9-12 years	2.951946	0.008
12+ years	ref	ref
Age		
45-54	ref	ref
55-64	2.630088	0.002
65-74	2.575024	0.002
75+	2.782211	0.002
Income		
$0-$9,999	1.041983	0.909
$10000-$29,999	0.7121312	0.313
$30,000+	ref	ref
General Health (wave1)		
Excellent	ref	ref
Good	3.079677	0.000
Fair	8.675889	0.000
Poor	15.69041	0.000

In Table 6, the two main independent variables are added to the control variables from Table 5. Again, education, age, and self-reported health at wave 1 are positively related to perceived health status at wave 4. Traumatic life events, measured by the five categories (major events, traumatic events, witnessed violence, experienced of bad news, and death events) is not associated with self-reported health measured at wave 4. In addition, results from Table 6 show that general problems measured in wave 4 are

positively associated with self-reported health at wave 4. Thus, for every additional general problem reported at wave 4, other things being equal, the likelihood of reporting fair/poor health a rather than excellent/good health at wave 4 is 12 percent higher.

Social stress theory argues that social support may mediate the effects of stress. The variable social support was added to Model 2 to determine if whether having social support mediates the exposure to chronic strains (general problems) reported by respondents at wave 4. The results for social support are reported in Table 7. Social support was found to have no association with self-reported health at wave 4. That is, social support did not mediate the effects of general problems on health status. Finally, the two moderating variables TraumaSupport and GenProbSupport were added individually to the Table 7 variables to determine whether an interaction effect occurs first between traumatic events and social support, and second between general problems and social support. TraumaSupport had no moderating effect on traumatic events (results not shown). Conversely, in Model 4, GenProbSupport shows a significant effect on general problems measured at wave 4.

Table 8 shows that GenProbSupport moderates the effects of stress (general problems) on health. That is, the effects of general problems reported at wave 4 on self-reported health at wave 4 are conditional on whether or not the respondent has social support.

Table 6: Results for Control and Predictor Variables

General Health (wave 4)	odds ration	P-value
Gender		
Female	1.271455	0.348
Male	ref	ref
Nativity		
US-born	0.2365476	0.831
Foreign-born	ref	ref
Education		
0-8 years	2.542865	0.03
9-12 years	2.980478	0.016
12+ years	ref	ref
Age		
45-54	ref	ref
55-64	2.975331	0.001
65-74	3.25909	0.001
75+	2.951469	0.004
Income		
$0-$9,999	0.8929311	0.783
$10000-$29,999	0.7476634	0.443
$30,000+		
General Health (wave1)		
Excellent	ref	ref
Good	2.838456	0.002
Fair	7.708264	0.000
Poor	15.02091	0.000
Tragedy Type		
Major Event	ref	ref
Traumatic Event	0.8657109	0.771
Witnessed Violence	0.7386045	0.838
Experiences of Bad News	1.34937	0.515
Death Events	0.9925053	0.983
General Problems (wave 4)	1.124991	0.001

Table 7: Results for Social Support

General Health (wave 4)	odds ration	P-value
Gender		
Female	1.315474	0.291
Male	ref	ref
Nativity		
US-born	1.067683	0.772
Foreign-born	ref	ref
Education		
0-8 years	2.883172	0.029
9-12 years	2.915702	0.019
12+ years	ref	ref
Age		
45-54	ref	ref
55-64	2.883172	0.002
65-74	3.186791	0.001
75+	2.880891	0.005
Income		
$0-$9,999	0.8700765	0.736
$10000-$29,999	0.740456	0.429
$30,000+		
General Health (wave1)		
Excellent	ref	ref
Good	2.879358	0.002
Fair	7.699307	0.000
Poor	14.87705	0.000
Tragedy Type		
Major Event	ref	ref
Traumatic Event	0.8892773	0.813
Witnessed Violence	0.7046822	0.814
Experiences of Bad News	1.317659	0.550
Death Events	0.9958887	0.991
General Problems (wave 4)	1.234912	0.001
Social Support (wave 4)	1.234912	0.434

Table 8: Results for Moderating Variable

General Health (wave 4)	odds ration	P-value
Gender		
Female	1.325184	0.280
Male	ref	ref
Nativity		
US-born	1.090499	0.705
Foreign-born	ref	ref
Education		
0-8 years	2.34738	0.050
9-12 years	2.740149	0.027
12+ years	ref	ref
Age		
45-54	ref	ref
55-64	3.041776	0.001
65-74	3.26561	0.001
75+	2.971435	0.005
Income		
$0-$9,999	0.8750721	0.748
$10000-$29,999	0.7636063	0.482
$30,000+		
General Health (wave1)		
Excellent	ref	ref
Good	2.876263	0.002
Fair	7.840418	0.000
Poor	15.45279	0.000
Tragedy Type		
Major Event	ref	ref
Traumatic Event	0.8515015	0.749
Witnessed Violence	0.6683506	0.787
Experiences of Bad News	1.287776	0.584
Death Events	0.9818568	0.960
General Problems (wave 4)	1.345435	0.002
Social Support (wave 4)	1.917002	0.054
GenProbSupport	0.8043888	0.036

Summary of Findings

In sum, the analysis examined two hypotheses regarding the relationship between traumatic life events, chronic strains, and physical health outcome variations between foreign-born and native-born Mexican-origin individuals. Overall, the hypothesis suggesting that traumatic life events negatively impact the health of individuals was not supported in the analysis involving the sample of foreign-born and native-born respondents. However, the hypothesis suggesting chronic strains negatively impact the well-being of individuals was supported among both foreign-born and native-born groups. Finally, the hypothesis suggesting that foreign-born respondents would fare better in terms of health (Latino/Hispanic paradox) compared to their native-born counterparts is not supported, with the results shown to be consistently in the opposite direction.

The next chapter discusses the implications of these findings.

CHAPTER V

CONCLUSION

The United States Latino population has experienced unprecedented growth in the past several decades. Despite these growing numbers there has been relatively little research that explores how exposure to negative life events and chronic strains affects the physical health outcomes of Latinos. Research is urgently needed to examine the environmental, psychosocial, and cultural factors that may positively or negatively influence the health and well-being of this population. This matter is of great importance because Latinos residing in the U.S. have been found to experience more exposure to stressors than the general population.

This thesis examined the extent to which traumatic life events and chronic strains affect the physical health outcomes of foreign-born and native-born Mexican-origin individuals (age 45 an older) residing along the U.S./Mexico border. Previous studies have focused on comparing exposures to stress across racial and ethnic groups, but few have focused specifically on the physical health outcomes of stress exposure within a single minority ethnic group. The three questions guiding this study are: 1) do traumatic life events negatively impact physical health outcomes, 2) do chronic strains negatively impact physical health outcomes, and 3) does the Latino/Hispanic paradox extend to a local/regional population. That is, do foreign-born respondents fare better in terms of health than their native-born counterparts in regards to exposure to stress?

Socioeconomic status and race/ethnicity have generally been associated with greater exposure to stressful events. Previous research has shown that exposure to traumatic life events and chronic strains are related to a wide variety of mental, biological, and physical health outcomes. Consistent with the literature, the results from this study show educational attainment is strongly predictive of health status. In contrast, income was found to have no association despite the fact that over 42% of respondents reported having a total household income of less than $10,000. The Lower Rio Grande Valley has among the highest poverty rates in the United States. A significant portion of respondents, both foreign-born and native-born alike can be classified as socioeconomically disadvantaged. Despite this fact, nearly 46% of the total sample reported their health to be either excellent or good. This finding may be attributed to the low cost of living in areas along the U.S./Mexico border.

Contrary to previous findings, there does not appear to be any negative physical health effects from exposure to life traumas for foreign-born or native-born Mexican-origin individuals in this region. Life traumas measured at wave 1 was not associated with self-reported health at wave 4. A possible explanation for this finding may be that only 10% of respondents reported having experienced a traumatic event such as physical abuse or having had a serious accident, injury, or illness that was life threatening, whereas, 70% of respondents reported a death event (i.e. death of parent/spouse/child) as being their first life trauma. It is worth noting that the median age reported for experiencing the first life trauma was 40 years (mean of 66 years). The results from the analysis are consistent with the literature on the distribution of traumatic events over the

life course. For instance, one of the most consistent findings in the variations of life events is that younger adults report a greater number of negative events than older adults (Hatch and Dohrenwend 2007; Kessler et al. 1999). In addition, studies have shown that older individuals tend to rate events as less potentially disruptive than younger respondents (Masuda and Holmes 1978).

In regards to the second hypothesis, chronic stress exposure was found to significantly impact the health of both foreign-born and native-born respondents. These results are consistent with the literature that suggests that "exposures to chronic stress are considered more toxic because they are most likely to result in long-term or permanent changes in the emotional, physiological, and behavioral responses that influence susceptibility to and course of disease" (Cohen et al 2007:1685). While the results of the control variables included in the analysis showed no association between income and perceived health, other factors not included in this study such as ongoing disabilities, difficulties getting medical care, and fear of crime may influence the perceived health of respondents in the sample.

Previous research has shown that social support may mediate the effects of stress. Social support was found to have no direct association with self-reported health at wave 4 in our analysis. That is, social support did not mediate the effects of life traumas or general problems on health status. However, social support does moderate the impact of general problems. The moderating variable (GenProbSupport) shows a significant effect on general problems measured at wave 4. This suggests the effects of general problems

reported at wave 4 on self-reported health at wave 4 are conditional on whether or not the respondent has social support.

Finally, the hypothesis suggesting that foreign-born respondents would fare better in terms of health (Latino/Hispanic paradox) compared to their native-born counterparts is not supported. The results showed no significant differences between foreign-born and native-born respondents with respect to the effects of stress exposure on physical health and well-being. These finding are in contrast to previous research that has shown that foreign-born individuals residing in the United States tend to show better physical health and mortality outcomes than their native-born counterparts (Hummer et al 1999). There may be several reasons for these findings. For instance, while foreign-born Latinos tend to show better physical health and mortality outcomes than their native-born counterparts, this initial advantage tends to lessen with increasing time spent in the U.S. Foreign-born respondents included in the study had resided in the United States an average of 51 years (median of 35 years). Perhaps foreign-born come to resemble their native-born counterparts because foreign-born Latinos are more likely to engage in negative health behaviors with length of residence in the United States (Turra and Goldman 2007). Finally, foreign-born Latinos residing along the U.S.-Mexico border may be exposed to additional stressors due to recent increases in funding for U.S. border enforcement policies, such as the militarization of the border which included the physical construction of walls, resulting in fear of deportation. This may in turn work against their health advantage.

Limitations

One of the limitations of this study is that the data from the Border Epidemiologic Study on Aging did not include the most robust measures for the assessment of traumatic life events and chronic strains. While the measures used in this analysis allowed for the categorization of different types of negative life events, it did not allow for a count to be made of different life traumas throughout the life course. Specific checklists designed to measure traumatic life events and recent life events (within a year) would have allowed for a more in-depth evaluation of the effect of life time traumas on physical health outcomes. Likewise, the measure of general problems only included certain measurements of chronic strains. Measures of specific domains, such as financial/economic, occupational, and parental stress would have allowed for a better understanding of the types of chronic strains Mexican-origin individuals are exposed to. Additionally, this study was limited to only analyzing one indicator of health (self-rated health at wave 4).Though self-rated health has been found in other studies to be predictive of mortality, additional indicators of health would have strengthen this analysis. Finally, this study was limited to analyzing the effects of traumatic life events and chronic strains among participants residing in the Lower Rio Grande Valley of Texas.

Future Research

These results suggest a need for future research on the interplay between different types of stressors and physical health outcomes among Mexican-origin individuals. Further investigation should consider whether traumatic life events and chronic strains affect Mexican-origin individuals across different age groups. The analysis here does provide some insights, but it is only a beginning and further investigation is needed to clarify how stressful life events impact the mental and physical health of Mexican-origin individuals living in other regions of the country. Further research must determine whether the Latino/Hispanic paradox can be explained by differential exposure and vulnerability to stress. Previous research has shown that Mexican immigrants are at a higher risk to stress exposure than their native-born counterparts.

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